

ABSTRACT

A series of novel, melt- or mold-processable HA esters with varying aliphatic chain lengths are synthesized from silyl HA-quaternary (quat.) ammonium salt complex (preferably silyl HA-CTA, a silylated HA complex with cetyltrimethyl ammonium salt). Introduction of aliphatic acyl groups, preferably acid chlorides, to disrupt the strong HA intermolecular bonding, is done *via* acylation. Acylation takes place at the oxygen of the trimethylsilyloxy group $-O-Si(CH_3)_3$ in the silyl HA-CTA by removal of trimethylsilyl groups therefrom. Optionally, crosslinking may be performed during the shaping/molding of the HA esters into a structure/device, or thereafter, if at all. Native HA can then be regenerated/recovered by saponification/hydrolysis, removing acyl groups, $-CH_3(CH_2)_{10}CO$, and the cetyltrimethyl ammonium salt groups, -CTA, from HA ester. The structure/device of a preselected shape (e.g., porous or solid, bulk structure or fibers) may become a component of an assembly, a product that is further processed, integrated into another component (e.g., laminated, adhered, assembled, further shaped, chemically-intermixed/intermingled), and so on.